

OUTPUT SPECIFICATIONS FOR PPP PROJECTS: LESSONS FROM CASE STUDIES

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ABSTRACT

Output specifications convey the client's requirements on physical assets and services during their operation. A well written set of output specification can induce innovation, bring about increased efficiency and effect appropriate risk transfer from the public to the private sector in PPP projects. It stipulates what is required from a PPP project in terms of outputs rather than inputs; it states what performance standards are expected to be achieved, the monitoring mechanism and provides links to the payment mechanism. Drafting a clear and concise output specification is always a challenge especially for countries not using standard documents for procuring PPP projects. In this paper, case studies in three different PPP/PFI projects located in Hong Kong, the UK and Singapore are presented for comparing similarities and differences.

The aim of this paper is twofold, firstly to examine the issues in drafting output specifications in three different types of PPP projects. Secondly, lessons are drawn from these projects for improving the efficacy of output specifications.

KEYWORDS

Public Private Partnership (PPP), Private Finance Initiative (PFI), Output Specifications, Case Studies

INTRODUCTION

A comprehensive and accurate set of output specifications is an important part of tendering documents which are used for procuring Public Private Partnership (PPP) projects and Private Finance Initiative (PFI) projects (HM Treasury 1996). Unlike traditional procurement, which is based on prescriptive specifications, PPP/PFI projects bids are invited based on output-based specifications (Lam et al. 2011). The document is considered to be an effective contractual tool to help achieve physical and service requirements. It also specifies monitoring methods, rectification periods, performance deductions and links to the payment mechanism. In response to the functional performance or output requirements, the private sector then transforms this to a service design which should meet the performance requirements specified by the client. Usually, under a PPP arrangement, the private sector consortium is expected to operate, repair and maintain the assets throughout the entire concession period to an agreed quality standard and ensure continuity of the quality of the asset (Akintoye and Beck 2009). The private sector contractor is paid by the client either through monthly unitary payments which are based on the availability and quality of performance standards achieved, or directly charge the end-users for the services or products rendered.

Because the private contractors are responsible for financing, design, construction, operation and maintenance of the schemes, there are always opportunities to introduce innovations (Akintoye and Beck 2009). It is because contractors are not restricted by prescriptive specifications, but can choose methods and processes to meet the outputs or end-results desired by the clients. During the life of PPP/PFI contracts, the clients' requirements may be changed and output specifications need to be flexible and should be refined during the long concession period

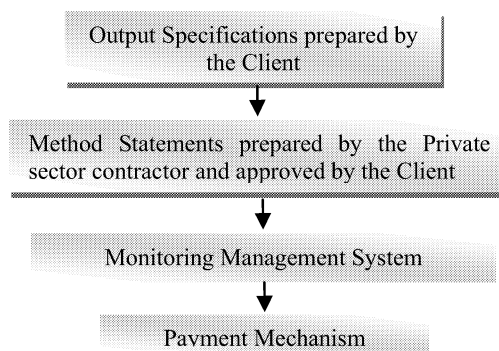


Figure 1 Performance Monitoring and Management

The above Figure 1 shows the process of monitoring outputs based on output specifications and the linkage with the payment mechanism. Generally public sector client prepares output specification for bidding and the winning private sector consortium submits method statements which are approved by the client. A monitoring management system is adopted and agreed by the client (both self-monitoring by the private sector contractor and by the client). During the contract execution, the contractor is required to submit monthly monitoring reports to the client. Key Performance Indicators (KPIs) are agreed which are aligned to the payment mechanism (a separate document), and in case there are service performance shortfalls/failures, these have to be rectified within stated periods of time. If performance targets are not achieved, payment deductions are charged to the service providers (Lam et al. 2011).

THE CASE STUDY APPROACH

There have been successful PPP/PFI case studies around the globe and three of them are selected from different cities for comparing the similarities and differences in output specification aspects. Case studies are widely used in organizational studies and across social sciences. As suggested by Yin (1984, 1994), the case study approach can be used as a research method to develop rich and comprehensive understanding about individuals, organizations, processes, programs, neighbourhoods, institutions, and even events. The basic facts of the three PPP/PFI projects are depicted in Table 1, followed by the backgrounds of projects, structure of contracts and financing, together with descriptions on how the output specifications were prepared, and the process of payment mechanism and change management.

The reasons for selecting the three cities and types of projects are as follows: (a) Hong Kong SAR has implemented a spate of infrastructure projects in the recent decade, and the PPP approach was used for some of these projects, mainly to enhance efficiency (Chan et al. 2009). Earlier PPP projects adopting the Build-Operate-Transfer procurement route include several tunnel projects completed before 2000. Direct user charges prevail in these tunnels, whilst the AsiaWorld Expo project was one of the first cases involving availability payments. Output specifications were drawn up on a bespoke basis. (b) the UK has implemented several hundreds PFI projects which are well spread out in the whole country over the last 20 years, including many hospitals for the National Health Service (NHS), due to budgetary constraints and efficiency pursuits (RICS, 1995). The UK is one of the mature markets for PPP/PFI projects in the world and the use of standard documents is common, and (c) Singapore has started using the PPP approach for procuring its infrastructure works since the last decade, focusing on water treatment plants, education and sports facilities. The ITE College West was one of the successful cases with contributions by consultants experienced in the worldwide market, including the preparation of output specifications.

The common thread through these 3 cases is that, unlike a tunnel project serving only motorists, they are all serving a multiple-user base. For AsiaWorld Expo, exhibitors and convention organisers of all trades are potential customers. For the Manchester hospital, a wide variety of specialist medical services are provided, including children, women and eye hospitals in a cluster. In the ITE College West, there are several academic departments of different

disciplines and the campus may be used by outside organisations for generating third party incomes. All three projects have been completed and put into operation in the 2000s. Hence, the output specifications form an important tool for monitoring performance of the concessionaires, of which facility management companies form parts. They are all linked to a broadly common payment regime based on availability of facilities and service quality.

Table 1 Basic facts of three PPP case study projects

	AsiaWorld Expo, Hong Kong SAR	Manchester NHS Trust, UK	ITE College West, Singapore
Client	Hong Kong SAR Government	Central Manchester University Hospitals, NHS Foundation Trust	Ministry of Education, Singapore
Project Company	Dragages et Travaux Publics HK Ltd	Catalyst Healthcare (Manchester) Ltd	Gammon Capital Consortium
Contract value	HK \$2.35 billion	£420 million*	S\$323.7 million
Area	100,000 m ² (total) 70,000 m ² (built) 30,000 m ² (retained estate)	155,074 m ² (total new build) 109,704 m ² (retained estate)	9.54 hectares
<u>Project schedule</u>			
Financial close	2003	December 2004	August 2008
Construction	2003-2005	Sep 2004 – April 2010	August 2008 – June 2010
Opened	December 2005	Phased to October 2010	July 2010
Concession period	25 years	38 years	27 years
Facilities management (FM)	NEC, Birmingham, UK	Sodexo Ltd Sodexo Healthcare Services Ltd Bovis Lend Lease Ltd	Gammon Capital and United Premas (a subsidiary of United Group Services)
Architect	Ronald Lu & Partners (HK) Ltd	Anshen and Allen	HOK and DP Architects

Sources of data: Drew (2005), AsiaWorld Expo (2010), Catalyst Lend Lease (2010) and PFI (2008)

Construction value

*

ASIAWORLD EXPO, HONG KONG

Project Background

AsiaWorld Expo is an international world class state-of-the art exhibition centre. The venue is strategically located next to the Hong Kong International Airport and surrounded by many attractive locations including Hong Kong Disney Land, SkyPlaza, Lantau Island's Giant Buddha, Ngong Ping 360 Cable Car and SkyCity Nine Eagles Golf Courses (AsiaWorld Expo 2010). Since its opening in 2005, a series of international exhibitions have been hosted by AsiaWorld Expo including Asian Aerospace International Expo and Congress, China Sourcing Fairs, Asia; Fashion Jewellery & Accessories Fair, ITU Telecom World 2006, etc.

Structure of Contract and Finance

AsiaWorld Expo reached financial close in 2003 and is one of the successful Public Private Partnership projects in Hong Kong. The Hong Kong Government was a majority shareholder and the private consortium was led by Dragages Hong Kong. The total area of the project was 100,000 m², and the estimated total contract sum of the project was HK \$4 billion. In Phase I, 70,000 m² of rentable space was built with a total contract sum of HK \$2.35 billion (AsiaWorld Expo 2010). Phase II is to be built on an adjacent plot of land when the demand warrants.

Output Specifications

Output specifications were developed through a series of consultation meetings with stakeholders and private sector contractors. Technical advisors, consultants and lawyers were hired by the Hong Kong Government to gradually improve the output specifications. Output specifications contained both prescriptive (building heights near to airport) and output-based specifications (such as loading requirements and seating capacities) and service elements such as lift services, air conditioning, security, cleaning and catering requirements, etc. A performance monitoring system was also included in the output specifications.

Payment Mechanism

Output specifications were linked to the payment mechanism. The client expects a minimum standard level of services to be delivered by the service provider and payment will be made to the latter if the space is available and quality of services delivered by the contractor meets the requirements. If the private sector contractor fails to provide the required level of services or space is unavailable, there are no liquidated damages or payment deductions specified in the output specification. However, the contractor will have to rectify the problem(s) and report to the public sector the valid reason(s) for unavailability or poor quality of services. Liquidated damages were only applied if the construction work was delayed.

Change Mechanism

Due to long term contract nature of PPP projects, changes in the requirements of the public sector are almost inevitable. To cater for future demand, a strategy was adopted for building another 30,000 square metres reserved space. The total estimated contract sum of the project was HK \$2.35 billion for Phase I (70,000 m²) and HK \$1.60 billion for Phase II (30,000 m²).

THE CENTRAL MANCHESTER HOSPITALS, UK

Project Background

The Central Manchester Joint Hospital's PFI project, with a construction cost of around £420 million, is acknowledged as one of the UK's leading teaching and research centers with general patient base in excess of 4 million a year. The Central Manchester University Hospitals, National Health Service (NHS) Foundation Trust involve the replacement of three existing hospitals on the Manchester Royal Infirmary site and build the Royal Manchester Children's Hospital with 371 beds, all equipped with 21st century modern equipment and three hospitals located at the same site are Saint Mary's Hospital, Manchester Royal Infirmary and Manchester Royal Eye Hospital (Catalyst Lend Lease 2010). The project involves the construction and maintenance of hospitals for a concession period of 38 years.

Structure of Contract and Finance

Manchester Joint Hospital's total construction value was £420 million. The project reached financial close in December 2004. The project was financed through a combination of £180 million secured index linked bonds, issued by Catalyst Healthcare (Manchester) Financing plc and a £175 million loan facility was provided by the European Investment Bank (EIB). An additional £21 million subordinated debt financing was provided by HSBC, and junior subordinated loan stocks and equity of £21 million were contributed by the project company shareholders (Catalyst Lend Lease 2010).

Output Specifications

Output specifications were prepared with the consultation of stakeholders and consultants hired by the NHS Trust. The output specifications were reviewed and refined after closely working with the consortium. Cleaning standards and monitoring mechanism were major negotiation points which were successfully incorporated into output specifications before the financial close. In response to the output specifications, the Project Contractor submitted method statements. The NHS Trust is responsible for core medical services and the Project Co. is responsible for maintenance, lifecycle and no-clinical soft services such as catering, cleaning, portering, linen and laundry and security over the 38-year concession term.

Payment Mechanism

Payment mechanism was linked to the service level specifications. The service level specifications were clearly specified in terms of service requirements and performance standards and in case of no-compliance; financial deductions would be made from the periodic payments. The Project Co. has to achieve minimum service standards, if it was unable to achieve the service targets; rectification periods were specified (for unavailability of operation theatre, there is a low tolerance level and high financial penalty). After the financial penalties, final payment will be settled.

Change Mechanism

NHS Trust prepared service level specifications and any changes or variations proposed by the public or private sector will be discussed and negotiated according to the *Deemed Service Variations*. Deemed Service Variations are often called the Change Protocol and form parts of the Project Agreement. It contains clauses about how the Client (NHS Trust) will request changes to the output specifications. It also stipulates how the Project Co. will respond to the NHS Trust requests. The main parts of the *Deemed Service Variations* include how to deal with Changes in Law, Changes by the Trust and the Project Co., etc. More than 100,000 square metres space is retained, which will be built later in the second phase.

INTITUTE OF TECHNICAL EDUCATION (ITE), COLLEGE WEST, SINGAPORE

Project Background

Due to increasing demand for social infrastructure projects in Singapore, PPP is getting popular. After publication of the PPP Handbook by the Ministry of Finance in 2004, a number of PPP projects were executed and successful examples include ITE College West and Singapore Sports Hub (recently reached financial close). The Singapore Education Department proposed to build new ITE College West, using the Public Private Partnership procurement approach for the first time in its education projects.

Structure of Contract and Finance

ITE College was procured using private sector resources for its Design-Build-Finance-Operate (DBFO) campus for a concession period of 27 years. ITE College can accommodate 7,200 full-time students, 8,100 part-time students and 630 staff. The total contract value of the project in net present value terms was S\$323.7 million, which was funded through a combination of equity and debt. Gammon Capital contributed equity and debt finance was provided by the Hongkong Shanghai Banking Corporation (HSBC), Sumitomo Mitsui Banking Corporation (SMBC), DEPFA Bank Plc and the Royal Bank of Scotland (RBS) (PFI 2008).

Output Specifications

ITE College West output specifications were also prepared through a series of consultation meetings. End-users were involved at the early stage of the project including teachers and students. Community's input was incorporated into the output requirements. Output specification documents contained development and constructions specifications and service specifications. The development and construction specifications include general, key facilities, design and constructions requirements. The service specifications include soft and hard facilities management services. The client expects high quality construction and facility management services which were delivered by the PPP contractor. The client specified the loading requirements such as dead and live loads on slabs, parapets and balustrades, etc. The output specifications also contained the minimum design, construction, performance and maintenance standards to be achieved. Since the PPP Co. is responsible to provide hard and soft facilities management services, the client prepared service specifications. These services include Mechanical & Electrical (M&E) and Fabric Management Services, Helpdesk, Logistic and AV Technical, Security and Cleaning Services, etc.

Payment Mechanism

Payment mechanism is based on the availability of services. The PPP Contractor will be paid in the form of Monthly Unitary Payment (MUP) (ITE 2007). The client will make performance-based payments to the contractor based on the availability of the assets and quality of services delivered by the contractor. If the facility is unavailable and if the contractor fails to achieve the specified quality services, then the payments will be deducted. The service performance shortfalls were linked to service priority categories such as super, high, medium and low. The services need to be rectified within specified periods of time. The services with a higher priority will have shorter rectification periods than those with a lower priority.

Change Mechanism

A change mechanism was incorporated in the project agreement through “White Boxes”, which means a portion of the constructed space was left to be fitted out when the need arises. This was a unique approach adopted to cater for future changes. The variation protocol specified how to deal with the changes initiated by the client or the PPP contractor. When change is either initiated by the client or the PPP contractor; they will follow the same process to deal with the change such as details of variation, impact of variations on service provisions, estimated cost, funding sources and if any regulatory approval is required, etc.

CONCLUSION

This paper is part of a research project with the objective of studying the use and impacts of output specifications in PPP/ PFI projects. The paper has presented a brief analysis of three case studies in the UK, Hong Kong and Singapore. It was found that output specifications prepared for all projects were well written with clear service standards and linked to the payment mechanism. In all the cases it was observed that output specifications were drafted through a series of consultation with end-users and private sector contractors. Output specifications were refined by the technical and legal advisors hired by the client and major elements were then negotiated. A comprehensive monitoring and reporting mechanism was agreed and every year amendments which arose were negotiated and incorporated into the contracts. It was noted that if the facilities were unavailable or either the contractors fail to deliver the required services standards, deductions will be charged to the payments in Manchester NHS Trust Hospitals and ITE College West, but not to the AsiaWorld Expo. The payment mechanism is linked to indices for inflation adjustment in all three cases studied. To deal with future changes, change/variation protocols were used. Land was reserved to accommodate the future expansion. Change procedures and mechanisms were agreed and formed part of the project agreement. Despite the fact that all three projects are different in nature, sizes and located in different countries, they share the common approach about development of output specifications, payment and change mechanism. The characteristics and development process of output specifications are common across different PPP projects, in that stakeholders’ involvement started at the early planning stage of projects, performance monitoring systems were developed, measureable performance standards were stipulated and failure to comply would attract payment deductions from the unitary charges. Output specifications were flexible to accommodate future changes. Change protocols were parts of the project agreements in all three case study projects.

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